

What is claimed is:

1. A method of making a differential housing assembly having a housing including a ring gear integrally formed therein and a housing cover, said method comprising the steps of:
forging a conical frustum from a steel rod;
deforming the frustum between upper and lower die halves of a tool to produce a primary housing preform having an annular rim; and
forging a plurality of teeth in the annular rim defining the ring gear.
2. The method of Claim 1 including the step of forming a blind hole in the primary housing preform.
3. The method of Claim 2 including the step of piercing the blind hole to form a hole.
4. The method of Claim 1 including a machining step for shaping the primary housing preform.
5. The method of Claim 1 including the step of heat treating and finish machining the primary housing preform to form the housing.
6. The method of Claim 4 wherein the step of machining includes forming a journal surface and shoulder on the housing preform for installing a bearing.
7. The method of Claim 4 wherein the step of machining includes creating an outside diameter of the plurality of teeth formed in the forging step.
8. The method of Claim 4 wherein the step of machining includes forming an internal spherical surface for receiving bevel gears, pinions, and washers.
9. The method of Claim 4 wherein the step of machining includes forming an internal cylindrical surface.
10. The method of Claim 4 wherein the step of machining includes drilling and reaming lubrication oil holes into the primary housing preform.

11. The method of Claim 4 wherein the step of machining includes forming a circular surface perpendicular to the axis of the housing preform.
12. The method of Claim 11 wherein the step of machining includes forming semi-circular recesses normal to the circular surface.
13. The method of Claim 1 including the step of forging a housing cover preform.
14. The method of Claim 13 including the step of machining the housing cover preform.
15. The method of Claim 14 wherein the step of machining includes forming an internal spherical surface for receiving bevel gears, pinions, and washers.
16. The method of Claim 14 wherein the step of machining includes forming an internal cylindrical surface.
17. The method of Claim 14 wherein the step of machining includes forming a circular surface perpendicular to the axis of the housing preform.
18. The method of Claim 14 wherein the step of machining includes forming semi-circular recesses normal to the circular surface.
19. The method of Claim 14 wherein the step of machining includes forming an external cylindrical surface.
20. The method of Claim 1 including the step of assembling the housing assembly.
21. The method of Claim 20 wherein the step of assembling includes installing a subassembly comprising bevel gears, bevel pinions, washers, and a pinion shaft inside the housing.
22. The method of Claim 20 wherein the step of assembling includes inserting the housing cover within the housing.
23. The method of Claim 20 wherein the step of assembling includes interconnecting the housing cover and housing.

24. The method of Claim 20 wherein the step of assembling includes fitting ball bearings into journals formed in the housing and housing cover.
25. A differential housing assembly comprising:
- a housing comprising a bell shaped body extending between a cylindrical first end and an opposing annular second end having a ring gear integrally formed thereon.
26. The differential housing assembly of Claim 25 wherein the annular second end includes an internal spherical surface formed thereon for receiving bevel gears, pinions and washers.
27. The differential housing assembly of Claim 25 wherein the housing includes a journal surface and shoulder formed on the cylindrical first end for receiving a bearing.
28. The differential housing assembly of Claim 25 wherein the housing includes an internal cylindrical surface formed on the cylindrical first end for allowing passage of an axle shaft.
29. The differential housing assembly of Claim 28 wherein the housing includes a circular surface formed perpendicular to the cylindrical surface.
30. The differential housing assembly of Claim 29 wherein the housing includes semi-circular recesses formed normal to the circular surface for receiving a bevel pinion shaft.
31. The differential housing assembly of Claim 25 further including a housing cover having a cylindrical first end and a spherical second end.
32. The differential housing assembly of Claim 31 wherein the spherical second end of the housing cover is inserted within the annular second end of the housing for attachment thereto.
33. The differential housing assembly of Claim 31 wherein the spherical second end includes an internal spherical surface formed thereon for receiving bevel gears, pinions and washers.

34. The differential housing assembly of Claim 31 wherein the housing cover includes an internal cylindrical surface formed on the cylindrical first end for allowing passage of an axle shaft.